

Autodesk Inventor: Beyond the Basics

Target Audience

The target audience for **Autodesk Inventor: Beyond the Basics** includes mechanical engineers, product designers, CAD drafters, manufacturing professionals, and engineering students who already possess a basic understanding of Autodesk Inventor and wish to develop more advanced modeling and documentation skills. The course is also suitable for professionals transitioning from other CAD platforms who want to improve productivity through advanced part modeling, assemblies, design visualization, and engineering documentation. Participants should have prior experience creating basic sketches, parts, and simple assemblies in Autodesk Inventor.

Course Objectives

Upon completion of this course, participants will be able to:

- Develop advanced parametric part models using industry-standard workflows.
 - Create robust sketches using advanced editing and constraint techniques.
 - Build complex solid models utilizing advanced modeling features.
 - Generate and manage work geometry for sophisticated designs.
 - Apply design intent through parametric relationships.
 - Create reusable design features using patterns and mirrors.
 - Assemble components using professional assembly techniques.
 - Produce exploded presentations and design animations.
 - Generate manufacturing-ready engineering drawings.
 - Improve design productivity through best practices and efficient workflows.
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Course Outcomes

By the end of this course, learners will be able to:

- Design complex mechanical components confidently.
- Apply advanced sketching and parametric modeling techniques.
- Create intelligent assemblies using constraints and joints.
- Develop reusable and configurable CAD models.



- Produce professional engineering drawings and documentation.
 - Create exploded views and presentation animations.
 - Manage large assemblies efficiently.
 - Prepare models suitable for manufacturing workflows.
 - Optimize design productivity using Autodesk Inventor tools.
 - Implement industry best practices in mechanical design.
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Course Outline

The course comprises **32 hours** of theory and labs and is divided into **14** different chapters. Each chapter will be followed by hands-on lab exercises to reinforce learning and gauge understanding of the topics covered.

Chapter 1. Autodesk Inventor Professional Environment

- Installing Autodesk Inventor
- Getting Started with Autodesk Inventor
- Starting a New Inventor File
- Invoking the Part Modeling Environment
 - Ribbon
 - File Menu
 - Quick Access Toolbar
 - InfoCenter
 - Browser
 - ViewCube
 - Navigation Bar
 - Status Bar
- Invoking the Assembly Environment
- Invoking the Drawing Environment
- Invoking the Presentation Environment
- Identifying Inventor Files
- Creating and Accessing a Project

- Invoking a Marking Menu
 - Customizing the Color Scheme
 - Choosing the User Interface Theme
 - Exporting Files to Other CAD Formats
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Chapter 2. Advanced Sketch Creation Techniques

- Invoking the Part Modeling Environment
 - Invoking the Sketching Environment
 - Working with the Selection of Planes
 - Specifying Units
 - Specifying Grids and Snap Settings
 - Creating Line Entities
 - Creating Arcs
 - Creating Circles
 - Creating Ellipses
 - Creating Rectangles
 - Creating Slots
 - Creating Polygons
 - Creating Splines
 - Creating Bridge Curves
 - Editing Splines
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Chapter 3. Professional Sketch Editing & Modification

- Trimming Sketch Entities
- Extending Sketch Entities
- Splitting Sketch Entities
- Offsetting Sketch Entities
- Creating 2D Fillets
- Creating 2D Chamfers

- Patterning Sketch Entities
 - Creating Construction Geometry
 - Mirroring Sketch Entities
 - Moving Sketch Entities
 - Copying Sketch Entities
 - Rotating Sketch Entities
 - Scaling Sketch Entities
 - Stretching Sketch Entities
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Chapter 4. Advanced Constraints & Parametric Control

- Applying Geometric Constraints
 - Horizontal
 - Vertical
 - Coincident
 - Collinear
 - Concentric
 - Parallel
 - Perpendicular
 - Tangent
 - Smooth
 - Symmetric
 - Equal
 - Fix
- Controlling Constraint Display
- Constraint Settings
- Applying Dimensions
- Editing Dimensions
- Working with Sketch States
- Displaying Degrees of Freedom

Chapter 5. Parametric Solid Modeling

- Creating Extrude Features
- Creating Revolve Features
- Navigating 3D Models
- Using Navigation Tools
- Using ViewCube
- Using Mouse Controls
- Applying Visual Styles
 - Realistic
 - Shaded
 - Wireframe
 - Technical Illustration
 - Watercolor
 - Sketch Illustration
- Model Visualization Techniques

Chapter 6. Advanced Reference Geometry

- Creating Work Planes
- Creating Offset Work Planes
- Creating Midplanes
- Creating Angular Work Planes
- Creating Tangent Work Planes
- Creating Work Axes
- Creating Work Points
- Creating User Coordinate Systems
- Managing Reference Geometry

Chapter 7. Advanced Feature Modeling Techniques

- Advanced Extrude Options
 - Advanced Revolve Options
 - Working with Multiple Profiles
 - Projecting Geometry
 - Projecting DWG Geometry
 - Creating Section Views
 - Editing Features
 - Editing Sketches
 - Displaying Earlier Model States
 - Reordering Features
 - Measuring Geometry
 - Applying Appearances
 - Applying Materials
 - Assigning Manufacturing Data
 - Calculating Physical Properties
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Chapter 8. Advanced Solid Modeling Techniques

- Creating Sweep Features
 - Creating Loft Features
 - Creating Coil Features
 - Creating Emboss Features
 - Creating Mark Features
 - Creating Rib Features
 - Applying Images
 - Creating Shell Features
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Chapter 9. Feature Reuse & Design Automation

- Creating Rectangular Patterns
- Creating Circular Patterns

- Creating Sketch-Driven Patterns
 - Suppressing Features
 - Unsuppressing Features
 - Mirroring Features
 - Mirroring Bodies
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Chapter 10. Complex Part Modeling

- Creating Holes
 - Creating Threads
 - Creating Edge Fillets
 - Creating Face Fillets
 - Creating Full Round Fillets
 - Creating Chamfers
 - Splitting Faces
 - Splitting Solid Bodies
 - Creating 3D Sketches
 - Creating Helical Curves
 - Creating Projected Curves
 - Creating Silhouette Curves
 - Creating Intersection Curves
 - Creating Curves on Faces
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Chapter 11. Advanced Assembly Design

- Bottom-Up Assembly Design
- Top-Down Assembly Design
- Creating Assemblies
- Inserting Components
- Working with Degrees of Freedom
- Assembly Constraints

- Motion Constraints
 - Transitional Constraints
 - Constraint Sets
 - Applying Assembly Joints
 - Editing Constraints
 - Editing Joints
 - Moving Components
 - Rotating Components
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Chapter 12. Assembly Management & Documentation

- Creating Assemblies Using Top-Down Design
 - Editing Assembly Components
 - Editing Components within Assemblies
 - Editing Components in Part Environment
 - Patterning Assembly Components
 - Mirroring Components
 - Copying Components
 - Creating Bills of Materials (BOM)
 - Managing Assembly Documentation
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Chapter 13. Design Visualization & Exploded Presentations

- Presentation Environment
- Capturing Timeline Actions
- Capturing Tweaks
- Editing Tweaks
- Snapshot Views
- Linked Snapshot Views
- Independent Snapshot Views
- Editing Snapshot Views

- Publishing Snapshot Views
 - Creating Exploded Views
 - Creating Storyboards
 - Creating Scenes
 - Playing Animations
 - Publishing Video Animations
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Chapter 14. Advanced Engineering Drawings & Documentation

- Drawing Environment
- Editing Sheet Sizes
- Creating and Editing Title Blocks
- Editing Drafting Standards
- Creating Base Views
- Creating Projected Views
- Defining Projection Angles
- Creating Auxiliary Views
- Creating Section Views
- Creating Detail Views
- Creating Overlay Views
- Creating Break Views
- Creating Break Out Views
- Creating Slice Views
- Creating Crop Views
- Applying Drawing Dimensions
- Applying Model Dimensions
- Adding Notes
- Adding Surface Finish Symbols
- Adding Weld Symbols
- Adding Hole and Thread Notes

- Creating Parts Lists (BOM)
- Editing Parts Lists
- Adding Balloons Automatically
- Adding Balloons Manually